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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/511,690	10/14/2004	Kenji Suzuki	96790P469	9175

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Blakely Sokoloff
Taylor & Zafman
7th Floor
12400 Wilshire Boulevard
Los Angeles, CA 90025

EXAMINER	
VLAHOS, SOPHIA	

ART UNIT	PAPER NUMBER
2611	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/511,690	SUZUKI ET AL.	
	Examiner	Art Unit	
	SOPHIA VLAHOS	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 October 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-62* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-62* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *14 October 2004* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *10/14/2004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Priority

1. Acknowledgment is made of applicant's claim for foreign priority (JP 2003-027913 filing date 2/5/2003) under 35 U.S.C. 119(a)-(d).

Drawings

2. Figure 32 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

3. Claims 1, 11-16, 22, 32, 42-47, 53 are objected to because of the following informalities: In claims 1,16, 22, 32, 47, 53 the preamble recites: "....characterized by comprising...." where the phrase "...characterized by..." is redundant and should be removed.

Claims 11-15, 42-46 recite: "(n is an integer of not less than 2)" where the "of" is redundant.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1-2, 16-17, 22-23, 32-33, 47-48, 53-54 are rejected under 35 U.S.C. 102(e) as being anticipated by Fullerton et. al., (U.S. 6,763,057).

With respect to claim 1, Fullerton et. al., disclose: a radio transmitter (Fig. 22, radio transmitter, column 9, lines 42-46) and a radio receiver (Fig. 23a, column 9, lines 46-49), said radio transmitter including encoding means for encoding a digital signal to be transmitted (Fig. 22, block 14, "time delay modulator" receiving digital information from block 26 (see column 4, lines 28-33) column 13, lines 16-20) and a transmission antenna which transmits the signal encoded by said encoding means (Fig. 22, antenna 20), and said radio receiver including a reception antenna which receives the transmitted signal (Fig. 23a, receiving antenna 32), and decoding means for performing decoding corresponding to encoding for the signal received by said reception antenna (Fig. 23a, see function of comparators (46) generating signals 56 and 58 (decoded signals), column 13, lines 55-64) and restoring the digital signal (column 13, lines 59-64, where outputs 56 and 58 correspond to the transmitted bits), wherein

communication is performed without using any carrier (Fig. 22 and Fig. 23a UWB system there is not use of a carrier).

With respect to claim 2, Fullerton et. al., disclose: characterized in that said encoding means encodes the digital signal to be transmitted by using a code not containing any DC component (Fig. 22, block 14 time-delay modulator see column 13, lines 20-24 performs time position modulation that does not have a DC component).

With respect to claims 16-17, 22-23 see above rejection of claims 1-2. Method claims 32-33, 47-48, 53-54 are rejected based on rationale similar to the one used to reject corresponding apparatus claims 1-2, 16-17, and 22-23.

6. Claims 1, 3, 5-7, 9, 11-13, 15, 16, 18, 20-21, 22, 24, 26-28, 30, 32, 34, 36-38, 40, 42-44, 46, 47, 49, 51-52, 53, 55, 57-59, 61 are rejected under 35 U.S.C. 102(e) as being anticipated by Suzuki (U.S. 7,257,148).

With respect to claim 1, Suzuki disclose: a radio transmitter (Fig. 5, column 2, lines 1-3) and a radio receiver (Fig. 8, column 2, lines 25-27), said radio transmitter including encoding means for encoding a digital signal to be transmitted (Fig. 5, see components to the left of band-pass filter 505, signal SG504, column 5, lines 13-20, Fig 6A, shows digital data sequence), and a transmission antenna which transmits the signal encoded by said encoding means (Fig. 5 transmitting antenna 506, column2, line 24), and said radio

receiver including a reception antenna which receives the transmitted signal (Fig. 8, receiving antenna 801 column 2, line 31) , and decoding means for performing decoding corresponding to encoding for the signal received by said reception antenna and restoring the digital signal (Fig. 8, combination of blocks 802, 803, 804, in combination with the operation of the remaineder blocks shown in Fig. 8 used to determine the correct PN code used in the dispreading process) see column 2, lines 63-62, see that signal out of block 804 corresponds to the originally transmitted signal,) , wherein communication is performed without using any carrier (see column 2, lines 1-3, UWB system that does not use any carrier for signal transmission).

With respect to claim 3, Suzuki discloses: characterized in that said encoding means comprises spreading means for performing a spread spectrum process by multiplying the digital signal to be transmitted by a spreading code and outputting the spread signal to said transmission antenna (Fig. 5, mixer 103, multiplying spreading code and data sequence), and said decoding means comprises despreading means for performing despreading corresponding to the spread spectrum process for the signal received by said reception antenna and restoring the digital signal (Fig. 8, mixer 803, despreading received signal, see column 2, lines 51-54).

With respect to claim 5, Suzuki discloses: characterized in that said encoding means comprises spreading means for performing a spread spectrum

process by multiplying the digital signal to be transmitted by a spreading code (Fig. 5, element 503, mixing data sequence signal and spread code), and signal generation means for generating an impulse signal in response to rise and fall of a signal spread by said spreading means (Fig. 5, block 504 impulse generator block (and block 505), see column 2, lines 16-19 see that the impulse generator is responsive to the rise/fall "1"/"0" of the spread signal) and outputting the impulse signal to said transmission antenna (Fig. 5, see signal out of impulse generator (and filter 505) is supplied to transmitting antenna) , and said decoding means comprises despreading means for performing despreading corresponding to the spread spectrum process for the signal received by said reception antenna (Fig. 8, mixers 803, 300, 307 see column 2, lines 51-62), and peak detection means for detecting a peak of a signal despread by said dispreading means and restoring the digital signal (Fig. 8, mixer 803 and integrator 804 functions as the peak detection means since when accurate synchronization is achieved and the correct spreading code out of delay circuit 814 is used to despread the received signal, the integrator 804 outputs a maximum (peak) value) output of integrator 804 as shown in Fig. 8 corresponds to the transmitted data).

With respect to claim 11, Suzuki discloses: characterized in that said signal generation means outputs only an impulse signal in an nth (n is an integer of not less than 2) harmonic band at a spread chip rate (column 3, lines 32-*37, where the harmonic band used by UWB system is 3GHz to 6GHz compared to the 5Ghz of LAN systems and other systems using the 2GHz and lower

frequency band, and with respect to the spreading code rate see Fig. 5 where the chip rate is at 2GHz (2 Gigachips/s)).

With respect to claim 6, Suzuki discloses: characterized in that said encoding means comprises spreading means for performing a spread spectrum process by multiplying the digital signal to be transmitted by a spreading code (Fig. 5, element 503, mixing data sequence signal and spread code), and signal generation means for generating an impulse signal in response to rise and fall of a signal spread by said spreading means (Fig. 5, block 504 impulse generator block (and block 505), see column 2, lines 16-19 see that the impulse generator is responsive to the rise/fall "1"/"0" of the spread signal) and outputting the impulse signal to said transmission antenna (Fig. 5, see signal out of impulse generator (and filter 505) is supplied to transmitting antenna), and said decoding means comprises signal regeneration means for regenerating the spread signal from the signal received by said reception antenna (Fig. 8, block 802, band-pass filter, column 2, lines 31-34), and despreading means for performing despreading corresponding to the spread spectrum process for the spread signal output from said signal regeneration means and restoring the digital signal (Fig. 8, mixer 803 and integrator 804, column 2, lines 51-54, 64-65).

With respect to claim 12, claim 12 is rejected based on a rationale similar to the one used to reject claim 11 above.

With respect to claim 7 claim 7 is rejected based on a rationale used to reject claims 5 and 6 above.

With respect to claim 13, claim 13 is rejected based on a rationale similar to the one used to reject claim 11 above.

With respect to claim 9, claim 9 is rejected based on a rationale similar to the one used to reject claim 7 above, where the "...differentiated spread signal..." of claim 9 is the spread signal out of filter band-pass filter 802 of Fig.8.

With respect to claim 15, claim 15 is rejected based on a rationale similar to the one used to reject claim 11 above.

With respect to claims 16, 18, 20-21 see above rejection of claims 1,3, 5, 11 respectively. With respect to claims 22, 24, 26-28, 30 see above rejection of claims 1, 3, 5-7, 9 respectively.

With respect to method claims 32, 34, 36-38, 40, 42-44, 46 these claims are rejected based on a rationale similar to the one used to reject corresponding apparatus claims 1, 3, 5-7, 9, 11-13, 15 respectively. Method claims 47, 49, 51-52 are rejected are rejected based on a rationale similar to the one used to reject corresponding apparatus claims 16, 18, 20-21. Method claims 53, 55, 57-59, 61

are rejected are rejected based on a rationale similar to the one used to reject corresponding apparatus claims 22, 24, 26-28, 30.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 8, 14, 29, 39, 45, 60 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki (U.S.7,257,148).

With respect to claim 8, claim 8 is rejected based on a rational similar to the one used to reject claim 5 above, where the integrator also functions as a peak detector. Therefore the difference between Suzuki and claim 8 is that "...and peak detection means for detecting a peak of the signal output from said integrating means and restoring...." of claim 8 is a separate component. However, peak detectors are known in the art (spread spectrum correlators, despreaders) and therefore it would have been obvious to a person of ordinary skill in the art to use a (separate) peak detector to detect a peak of the signal out of the integrator, in order to decode the received data, depending on the available space, components in the system design.

With respect to claim 14 claim14 is rejected based on rationale similar to the one used to reject claim 11 above.

With respect to claims 29, 39 and 60 these claims are rejected based on a rationale similar to the one used to reject claim 8 above. Claim 45 is rejected based on rationale similar to the one used to reject claim 14 above.

9. Claims 2, 4, 17, 19, 23, 25, 33, 35, 48, 50, 54, 56 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki (U.S.7,257,148) in view of Mochizuki et. al., (U.S. 6,459,721).

With respect to claim 2, Suzuki does not expressly teach: characterized in that said encoding means encodes the digital signal to be transmitted by using a code not containing any DC component.

In the same field of endeavor, Mochizuki et. al disclose: using a code not containing any DC component (see column 16, lines 5-8, see design of PN code(s)).

At the time of the invention, it would have obvious to a person of ordinary skill in the art to modify the system of Suzuki based on the teachings of Mochizuki et. al so that the encoding means (of Suzuki) encodes the digital signal to be transmitted by using a code not containing any DC component (PN codes with minimized DC component) so that transmission spectrum does not contain any undesired frequency components).

With respect to claim 4, see above rejection of claim 2.

With respect to claims 17, 19, 23, 25 these are rejected based on a rationale similar to the one used to reject claims 2, 4 above.

Method claims 33, 35, 48, 50, 54, 56 are rejected based on a rationale similar to the one used to reject corresponding method claims 2, 4,17, 19, 23, 25 above.

10. Claims 10, 31, 41, 62 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki (U.S.7,257,148) in view of Warren et. al., (U.S. 6,075,807).

With respect to claim 10, Suzuki does not expressly teach: characterized in that letting ΔS be the differentiated spread signal, C be a spreading code corresponding to the spread signal ΔS, P be a correlation value between the spread signal ΔS and the spreading code C, and M be a code length of the spreading code C,

$$P \approx \sum_{k=1}^{M} \left(\Delta S_k \sum_{r=k}^{M} C_r \right)$$

is established.

In the same field of endeavor, Warren et. al., discloses: in that letting ΔS be the differentiated spread signal (Fig. 1, baseband received signal in the shift register, Fig. 1, differentiated signal in stages 12_M through 12_1 column 3, lines 50-54), C be a spreading code corresponding to the spread signal ΔS (Fig. 1 spreading code of M length), P be a correlation value between the spread signal

ΔS and the spreading code C (Fig. 1, output of summing unit 16, adding correlation values between spread signal and spreading code), and M be a code length of the spreading code C,

$$P \approx \sum_{k=1}^{M} \left(\Delta S_k \sum_{r=k}^{M} C_r \right)$$

is established (see equivalent output out of summing unit 16 of Warren et. al.,).

With respect to claims 31, 41, 62 these claims are rejected based on a rationale similar to the one used to reject claim 10 above.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SOPHIA VLAHOS whose telephone number is 571 272 5507. The examiner can normally be reached on MTWRF 8:30-17:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammed Ghayour can be reached on 571 272 3021. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

1/2/2008
SV

MOHAMMED GHAYOUR
SUPERVISORY PATENT EXAMINER